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WO 98/36997 A1

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(54) Abstract Title

Apparatus for releasing a security device held within an information storage media holder

(57) An apparatus suitable for releasing a security device 3 held by a locking means 4 within an information storage media holder 2 comprises a slot 1 for receiving an edge of the holder 2 and a magnetic release device 8,9 positioned to release the locking device 4 when the holder is inserted into the slot. The apparatus preferably comprises a first magnet 8 for releasing the locking means 4 and a second magnet 9 for assisting in withdrawal of the security device 3 from the holder 2 as the holder is withdrawn from the slot 1. The magnetic release device may be an electromagnet. The slot 1 is preferably provided with one or more sloping surfaces to help guide a holder into the slot (Figures 6B,6C). The information storage media holder 2 may be a CD or DVD container. The apparatus may be mounted on or under a point of sale counter.

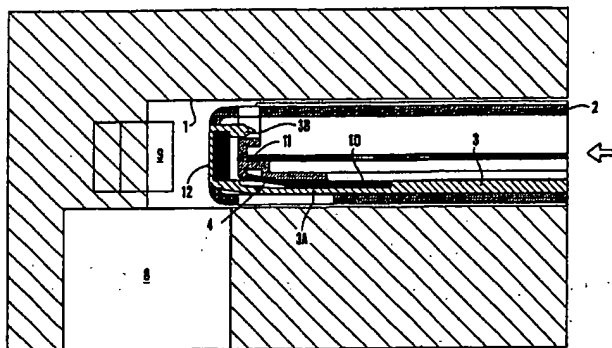


Fig.3A

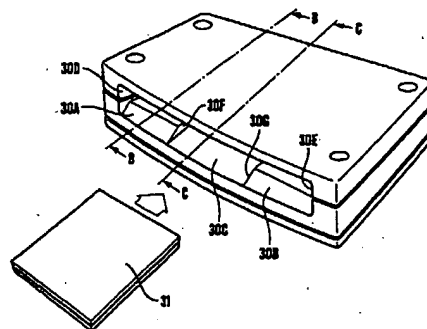


Fig.6A

1/8

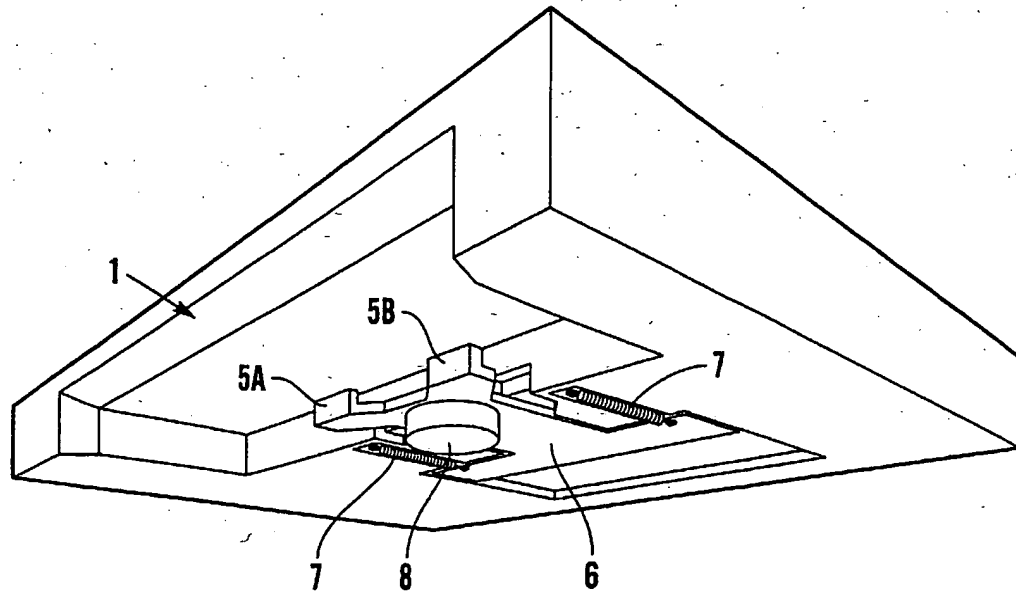


Fig. 1

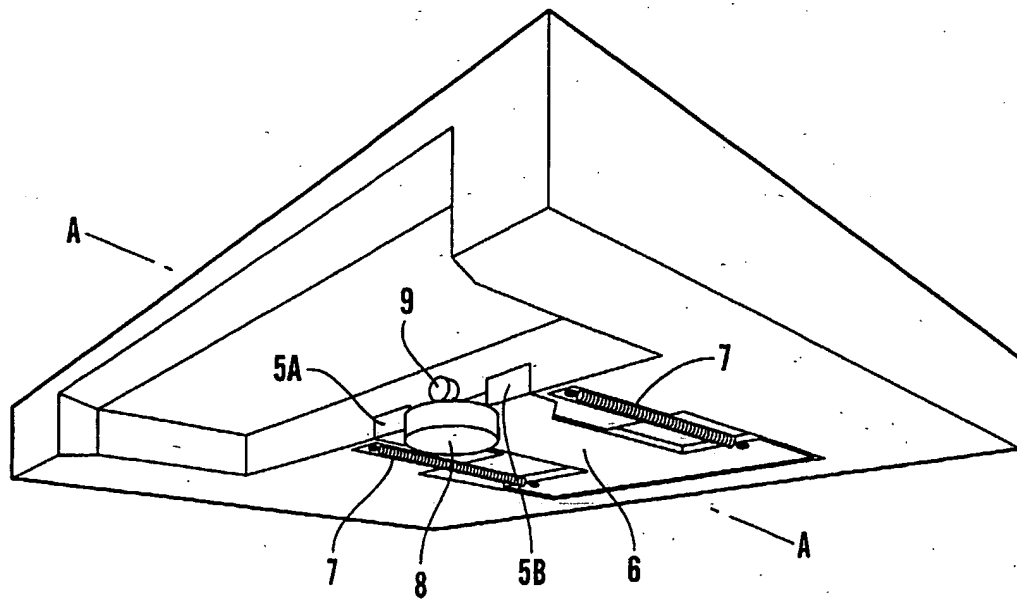


Fig. 2

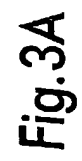


Fig. 3A

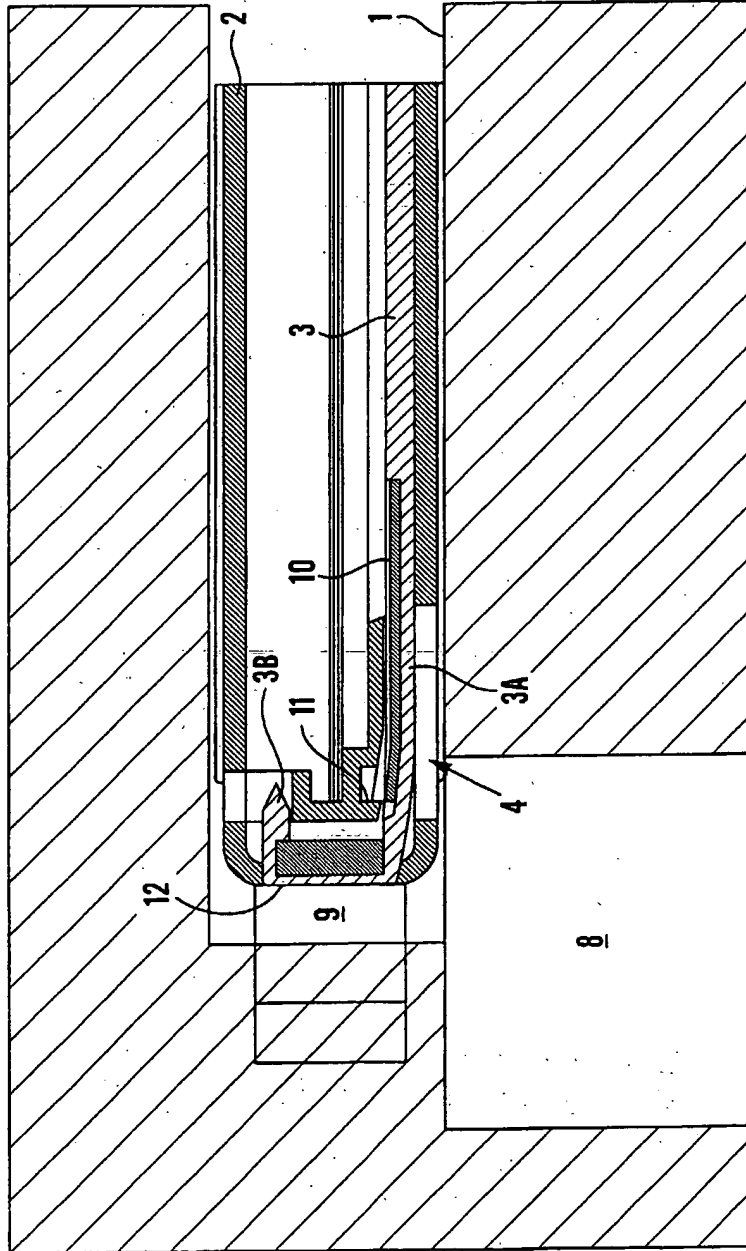


Fig.3B

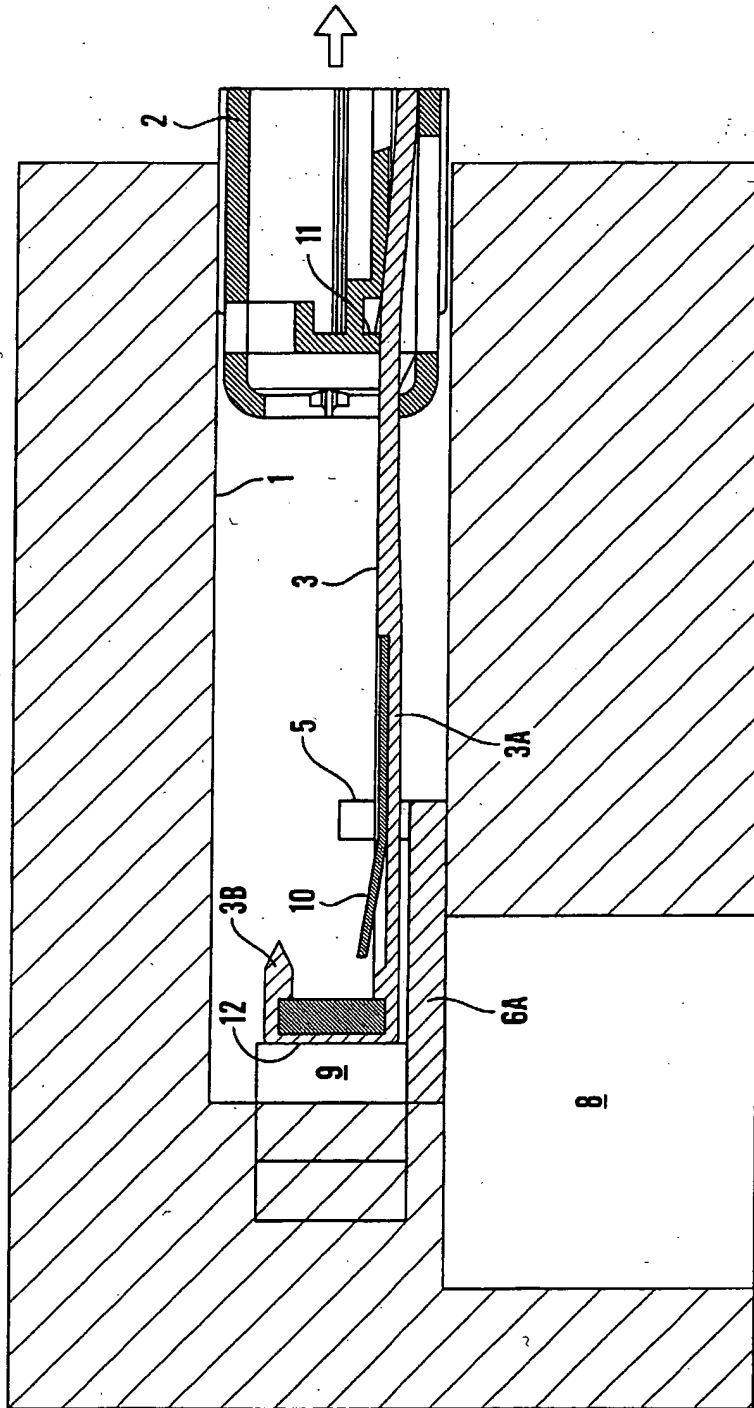


Fig.3C

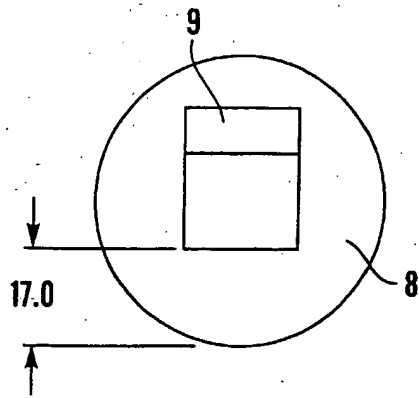


Fig. 4B

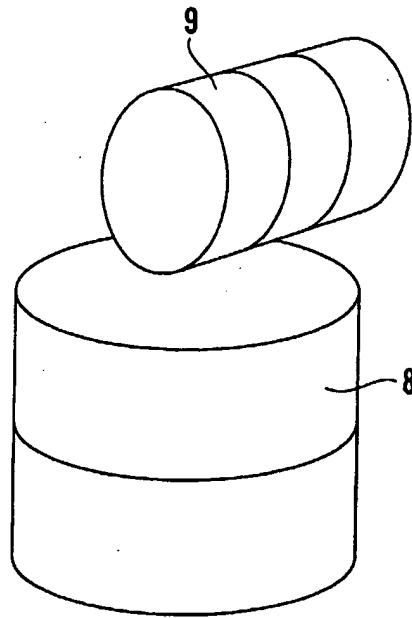


Fig. 4A

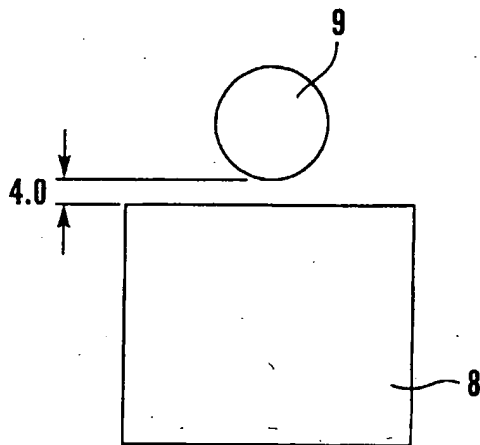
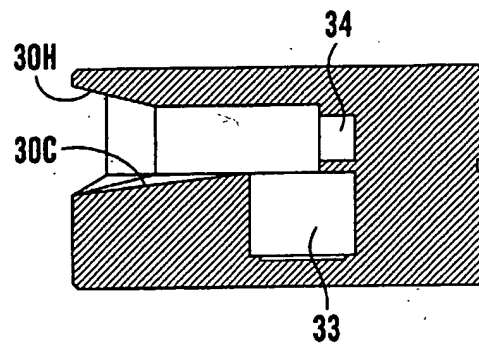
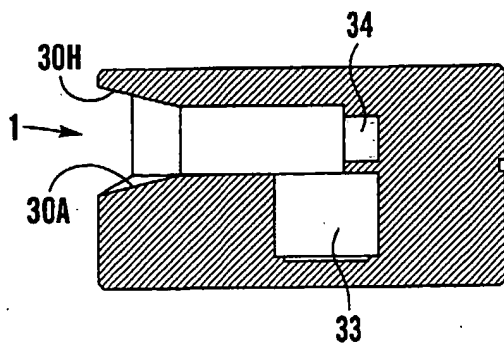
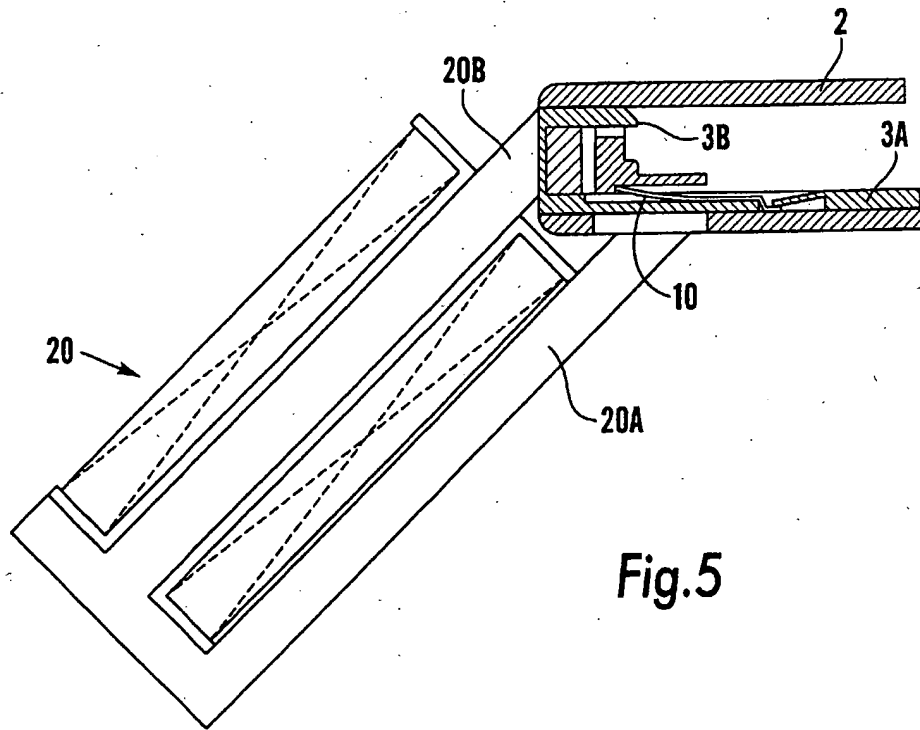


Fig. 4C

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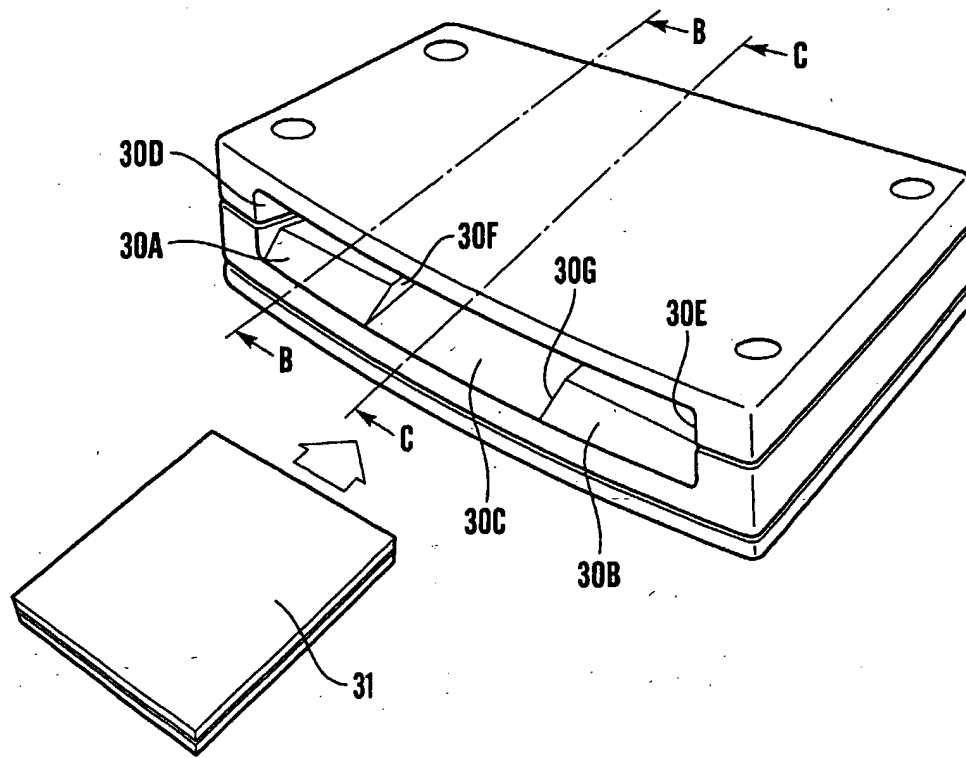


Fig.6A

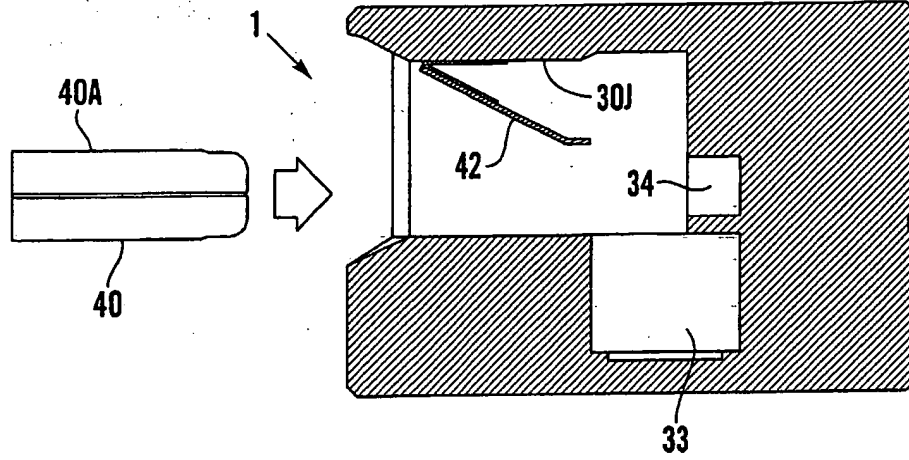


Fig. 7A

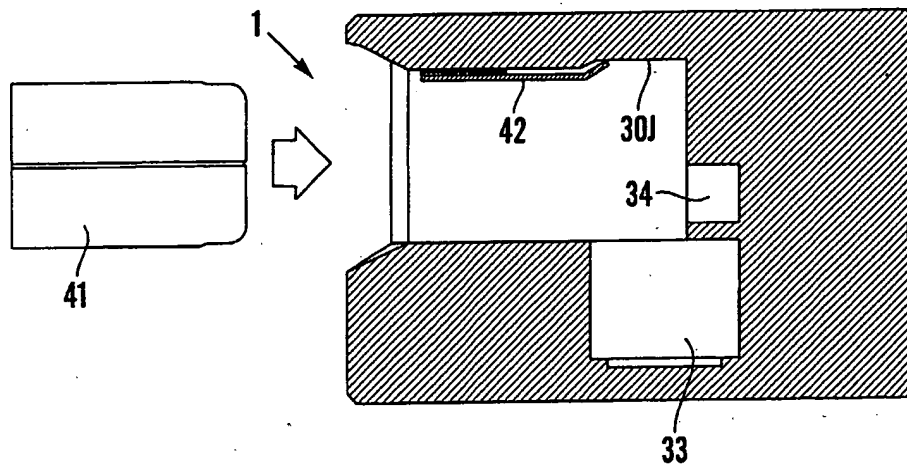


Fig. 7B

APPARATUS FOR RELEASING SECURITY DEVICE

This invention relates to apparatus for releasing a security device held within a container, and particularly to a security device within a container housing information storage media, e.g. a CD or DVD.

The invention relates to apparatus for use with a security device such as that described in PCT/GB01/04553 (Publication No.) and PCT/GB01/05000 (Publication No.), the disclosure of both being incorporated herein.

This invention relates to apparatus for releasing a security device held within a container by locking means, the apparatus comprising a slot for receiving an edge of the container and magnetic release means positioned to release the locking means when the container is inserted into the slot.

Other features of the invention will be apparent from the following description.

The invention will now be further described, merely by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a perspective, part cut-away, view (from in front and beneath) of a preferred embodiment of apparatus according to the invention prior to insertion of a container;

Figure 2 is a corresponding view of the apparatus as it would be when a container is fully inserted therein (although the container is omitted for clarity);

Figures 3A-3C are cross-sectional views on line A-A of Figure 2 with the container shown being inserted, in the fully inserted position and being withdrawn;

Figures 4A-4C show a plan view, a front view and a perspective view, respectively, of two magnets used in the apparatus shown in Figures 1-3;

Figure 5 is a cross-sectional view of an electromagnet that may be used in place of the magnets shown in Figure 4 shown with a container located for release thereby;

Figure 6A is a perspective view of apparatus such as that shown in Figures 1-3 with a modified opening to guide a CD box (also shown); Figures 6B and 6C are cross-sectional views taken on lines B-B and C-C of Figure 6A; and

Figures 7A and 7B are cross-sectional views of another version of the apparatus adapted to receive standard height DVD boxes (shown in Figure 7A) and double height DVD boxes (shown in Figure 7B).

The apparatus shown in Figures 1-3 comprises a substantially rectangular slot 1 for receiving an edge of a container 2 with a security device 3 held therein by a locking device 4. The security device has a long arm 3A engaging a base portion of the container and a short arm 3B engaging a lid portion of the container.

At the back of the slot, two pushing arms 5A and 5B are provided. The arms 5A, 5B extend from a flat, slidable member 6 which is resiliently biased by springs 7 to the outward position shown in Figure 1.

A magnetic release mechanism is provided within the slot 1 to release the locking device 4 when the container 2 is inserted in the slot 1 and to hold the security device 3 within the slot as the container 2 is withdrawn therefrom so the security device 3 is withdrawn from the container 2, the container being inserted into the slot 1 in a first direction and withdrawn from the slot in a second direction which is opposite to the first direction.

In the embodiment illustrated in Figures 1-3, the magnetic release mechanism comprises a first magnet 8 and a second magnet 9 positioned at right angles to each other.

The first magnet 8 acts to attract a spring arm 10 of the locking device 4 towards it so as to disengage the spring arm 10 from a detent 11 in the container 2 which, whilst they are engaged, prevent the security device 3 being withdrawn from the container 2.

The second magnet 9 acts to attract a head 12 of the security device 3 so as to hold the security device within the slot 1 whilst the container 2 is withdrawn therefrom. The security device 3 can then be manually removed from the slot after the container 2 has been withdrawn.

As the spring arm 10 and head 12 are close to each other, the magnets 8 and 9 also need to be positioned close to each other. It has been found that due to interaction between the magnetic fields of the respective magnets, the first magnet 8 should be positioned partially beneath the second magnet 9 as will be explained further in relation to figures 4A-4C.

Figure 4A shows a perspective view of the magnets 8 and 9 from the front and one side. The first magnet 8 comprises two neodymium magnets each 25mm in diameter and 10mm in thickness. The second magnet 9 comprises three neodymium magnets each 10mm in diameter and 4mm in thickness. As shown in the plan view of figure 4B, the second magnet 9 is positioned above the first magnet 8 with the front edge of magnet 8 projecting 17mm beyond the front surface of magnet 9 and, as shown in the front view of Figure 4C, the second magnet 9 is positioned 4mm above the first magnet 8.

Figure 3A shows a cross-section on line A-A of Figure 2 showing the container 2 as it is being inserted into the slot 1. In this position, the spring arm 10 is engaged with the detent 11 so the security device 4 is locked in the container 2. As shown, the head 12 of the security device is located in a finger recess provided on the opening edge of the container 2.

Figure 3B shows the container 2 fully inserted in the slot 1. In this position, the first magnet 8 has pulled the spring arm 10 out of the engagement with the detent 11 so the

security device 4 is free to be withdrawn from the container 2. The head 12 of the security device 4 is also in engagement with the second magnet 9.

It should be noted that in moving from the position shown in Fig 3A to that of Fig 3B, the container is pushed in against the action of the arms 5A, 5B (which are not shown in Figures 3A and 3B) which engage the edge of the container 2 either side of the finger recess. Then, once the head 12 reaches the second magnet 9, the container 2 is pushed inwards by a further, small distance, e.g. 0.5-1.0mm, as the head 12, which has a slight arcuate shape, is flattened against the edge of the container 2. This causes the security device 3 to be pushed further into the case, e.g. by 0.5-1.0mm, which serves to move the tip of the spring arm 10 back from the detent 11 so it is free to be pulled down to the position shown in Figure 3B by the magnet 8. Before this small movement occurs, engagement of the tip of the spring arm 10 with the side of the detent 11 resists this downward movement. Furthermore, once the spring arm 10 is free to move, it is pulled down sharply against the body of the security device 3 and, in some cases, tends to make an audible 'click' as it does so. This click may be heard by the user and provides an indication that the locking device 4 has been released.

Alternatively, instead of the head 12 allowing for this slight inward movement by means of it being formed of a resilient material and having a slight arcuate shape, a resilient member (not shown) may be provided in the container such that the security device engages the resilient member when in the position shown in Figure 3A but, may be pushed further into the container, e.g. by 0.5-1.0mm, against the action of the resilient member to allow the spring arm 10 to be released from the side of the detent 11 and thus be free to be pulled down to the position shown in Figure 3B by the magnet 8. The resilient member may, for example, be a resilient arm moulded in the container 2 and which extends across the path of the short arm 3A of the security device 3 (such a resilient member is described further in PCT/GB01/05000 referred to above).

Once the locking device has been released, the container 2 can then be withdrawn from the slot, as shown in Figure 3C, leaving the security device 3 held in contact with the

second magnet 9. Once the container 2 has been removed, the security device 3 can be pulled away from the magnet 9 out of the slot.

Figure 3C also shows part 6A of the slidable member 6 which slides outwards under the action of the springs 7 to the position shown in Figure 1 as the container is withdrawn. The part 6A is designed to slide beneath the security device 3 as shown in Figure 3C to support the end of the security device 3 as the container 2 is withdrawn. This prevents the magnet 8 pulling the security device 3 down towards the base of the slot 1 and so distorting the device 3 (which could prevent the container 2 being withdrawn from the device 3).

Thus, to release the security device 3 from the container, the edge of the container 2 is inserted into the slot 1 until it engages the second magnet 9 at the back of the slot 1 whereupon the locking device 4 locking the security device 3 in the container 2 is automatically released. The container 2 can then be withdrawn from the slot 1 whilst the security device 3 remains held by the second magnet 9. Removal of the container 2 is partially assisted by the action of the arms 5A and 5B. The security device 3 is then pulled manually out of the slot 1 and can be re-used in another container.

It will be appreciated that with the arrangement described above, the container needs to be inserted into the slot the right way up, i.e. with the security device 3 on the side of the slot 1 provided with the magnet 8. In a further arrangement, a magnet corresponding to magnet 8 may be provided on the other side of the slot opposite magnet 8. The magnets could then be arranged so that only the magnet nearest the security device, whichever way up the container is inserted into the slot 1, acts upon the spring arm 10, the nearer the magnet being strong enough to counteract and overcome the magnetic pull of the further magnet.

In a further arrangement, electro-magnets may be used which are only activated when a container is inserted into the slot 2; insertion of the container being detected by a suitable sensor, e.g. by a light sensor.

Figure 5 shows one example of an arrangement of an electromagnet 20. The magnet has two arms 20A and 20B which, respectively, provide the functions of the magnets 8 and 9 referred to above. As shown, the electromagnet 20 is arranged at around 45 degrees to the direction of insertion of the container 2 and end faces of the two arms 20A and 20B are angled so the two end faces lie at 90 degrees to each other.

As indicated above, the apparatus is preferably arranged so that the electromagnet 20 is only activated when a container 2 is inserted into the apparatus, the magnet being actuated by means of some form of switch as the container is inserted into the slot. Use of a single electromagnet providing the function of the two magnets 8 and 9 described above also makes it easier to locate the magnet in the apparatus in the appropriate alignment as the relative positions of the end faces of the two arms 20A and 20B are fixed.

In such an arrangement, magnets can again be provided on opposite sides of the slot so the apparatus will work irrespective of which way up the container 2 is inserted into the slot. A sensor is thus provided to sense which way up the container is so the appropriate magnet can be activated. The sensor may, for instance, sense which side of the container the security device lie adjacent or may sense which is the front and rear surface of the container, e.g. by sensing a bar-code which is typically provided on the rear face of most CD or DVD containers.

Figure 6A is a perspective view of apparatus such as that shown in Figures 1-3 in which the mouth of the slot 1 is modified. Sloping surfaces 30A and 30B are provided at each end of the slot 1 to help guide a DVD container into the slot 1. And a sloping surface 30C is provided between the surfaces 30A and 30B to help guide a smaller CD container 31 into the slot 1.

A conventional DVD container is of similar width to the slot 1 so its side surfaces are guided by side walls 30D and 30E of the slot. Whereas a conventional CD box is narrower than a DVD box and is guided by a first side wall 30F between the sloping

surfaces 30A and 30C and a second side wall 30G between the sloping surfaces 30B and 30C.

Figures 6B and 6C are cross-sectional views of the apparatus taken on lines B-B and C-C of Figure 6A, respectively. These also show an inclined surface 30H at the mouth of the slot 1 on the upper part of the apparatus. Recesses 32 and 33 for receiving the magnets 8 and 9 are also shown.

Figures 7A and 7B show cross-sectional views of a further version of the apparatus having an enlarged slot 1 capable of receiving a standard height DVD container 40 (as shown in Figure 7A) and a double height DVD container 41 (as shown in Figure 7B).

A spring arm 42 is provided on an upper wall 30J of the slot biased towards the position shown in Figure 7A. The spring arm 42 provides a guide for the upper surface 40A of the container 40 despite the fact that the slot 1 is taller than the container.

When a double height DVD container 41 is inserted into the slot 1 it pushes the spring arm 42 up against the upper wall 30J. The apparatus can thus be used to release security devices from both standard height DVD containers and double height DVD containers.

The features shown in Figures 6A-6C may also be combined with those of Figures 7A and 7B to enable the apparatus to guide smaller CD containers into the appropriate position relative to magnets in the recesses 33 and 34 as well as DVD containers of different heights.

The apparatus described above may be mounted on a counter adjacent a sales till. It may also be mounted to the underside of a counter so it is less accessible and less visible to customers.

CLAIMS

1. Apparatus for releasing a security device held within an information storage media holder by locking means, the apparatus comprising a slot for receiving an edge of the holder and magnetic release means positioned to release the locking means when the holder is inserted into the slot.
2. Apparatus as claimed in claim 1 comprising a first magnet for releasing the locking means and a second magnet for assisting in withdrawal of the security member from the holder as the holder is withdrawn from the slot.
3. Apparatus as claimed in claim 2 in which the first and second magnets are mounted at substantially 90 degrees to each other.
4. Apparatus as claimed in claim 1 in which the magnet has a first portion for releasing the locking means and a second portion for assisting in withdrawal of the security member from the holder as the holder is withdrawn from the slot.
5. Apparatus as claimed in claim 4 in which the first and second portions act at substantially 90 degrees to each other.
6. Apparatus as claimed in any preceding claims in which the magnet or one or more of the first and second portions are electromagnets.
7. Apparatus as claimed in claims 5 and 6 in which the first and second portions are provided by first and second arms of an electromagnet.
8. Apparatus as claimed in claim 7 in which end faces of the first and second arms are angled so as to lie substantially at 90 degrees to each other.
9. Apparatus as claimed in claim 6, 7 or 8 having switching means for actuating the or at least one of the electromagnets when a holder is inserted into the slot.

10. Apparatus as claimed in any preceding claims in which an entrance to the slot is provided with one or more sloping surfaces to help guide a holder into the slot.
11. Apparatus as claimed in any preceding claim in which the slot has guide walls for guiding holders of different sizes.
12. Apparatus as claimed in any preceding claim in which resilient means are provided within the slot to help in guiding a holder inserted into the slot towards a desired position relative to said magnetic release means.
13. Apparatus as claimed in any preceding claim for releasing a security device which is inserted into a holder in a direction perpendicular to said edge of the holder.
14. Apparatus as claimed in claim 13 arranged to receive said holder with the holder being inserted into the said slot in a first direction perpendicular to said edge and withdrawn from said slot in a second direction which is opposite to the first direction once the locking means has been released.
15. Apparatus for releasing a security device held within an information storage media holder by locking means substantially as hereinbefore described with reference to and/or as shown in one or more of the accompanying drawings.



INVESTOR IN PEOPLE

Application No: GB 0128731.7
Claims searched: 1-15

Examiner: Barnaby Wright
Date of search: 9 April 2002

Patents Act 1977 Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.T): E2A (AARR, ACPX, AEE)

Int Cl (Ed.7): E05B (47/00, 73/00)

Other: Online: EPODOC, JAPIO, WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X, P	WO 01/31152 A1 (MW TRADING) See whole document, especially figure 4, and page 3, line 32 to page 4, line 18.	1, 6, 13, 14 at least
X, P	WO 01/20107 A2 (ALPHA SECURITY) See whole document, especially page 9, lines 17-21, and page 10, line 13 to page 11, line 9.	1, 6, 10-14
X	WO 98/36997 A1 (ALPHA ENTERPRISES) See whole document, especially page 22, lines 3-27.	1, 6, 13, 14 at least
X	US 5850752 (LAX) See whole document, especially figures 2, 3 and 9, and column 5, lines 40-64.	1, 6, 13, 14 at least
X	US 5598728 (LAX) See whole document, especially figures 2, 3 and 9, and column 5, line 43-67.	1, 6, 13, 14 at least

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.